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ABSTRACT

An access system is described which comprises a door locking system (14) which is connected to a telephone (20). The system (14) has an input for receiving a user input so that information indicative of the user can be transmitted to the telephone (20) to enable the telephone (20) to dial a householder at a remote location and provide data relating to the person's premises. The person can then input information into his or her telephone for transmission back to the telephone (20) for receipt by the system (14) to enable the door (10) to be unlocked. Also disclosed is an access system for a hotel which enables data relating to a guest to be transmitted over the hotel telephone network to the room to be occupied by the guest so that when the guest arrives at the door of his or her room data can be input into an input and compared with the information transmitted over the telephone system to enable the door to be opened.

OPTION 1 – HOME

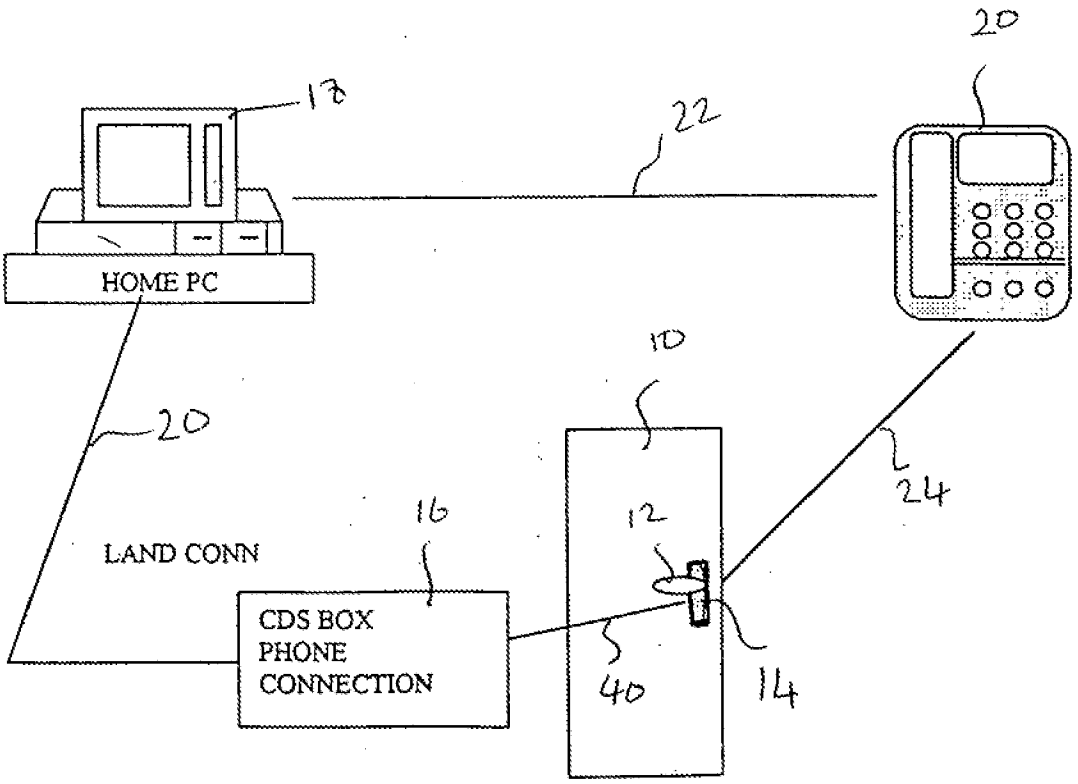

Fig1

AUSTRALIA

Patents Act 1990

COMPLETE SPECIFICATION

STANDARD PATENT

Applicant(s):

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A.C.N. 087 107 499

Invention Title:

ACCESS SYSTEM

The following statement is a full description of this invention, including the best method of performing it known to me/us:

ACCESS SYSTEM

This invention relates to an access system for enabling access to a premises. The invention has particular application to domestic environments and also to hotel rooms but could be used in many other environments.

The provision of access to third parties in domestic establishments such as allowing a tradesman access to a home normally requires the home owner to be present and to greet the tradesman and allow the tradesman to enter the premises to carry out the work required. This can be inconvenient and often requires the home owner to take time off from work in order to be present when the tradesman arrives. Often, as is well known, tradesman cannot provide a fixed time for their expected arrival and this exacerbates the problem because a home owner may need to spend a considerable amount of time at home waiting for the tradesman to arrive.

A first aspect of the invention is directed to providing a system which overcomes this problem.

The invention, in the first aspect, may be said to reside in an access system for a door, including;

an input for enabling a user to input information;

door locking means for locking the door and selectively enabling the door to be opened;

access means coupled to the input and the door locking means for forwarding the information supplied to the input to a transmitter so the transmitter can transmit the information to a remote location, and for receiving information from the remote location to apply a signal to the door locking means for unlocking the door.

Thus, since information can be transmitted to a remote location, a home owner need not be present at the home when

a tradesman arrives. The tradesman need merely supply a predetermined code to the input and that code will be transmitted to the remote location where the home owner will be present. The remote location may be a fixed location such as the home owner's place of business or could be the home owner's mobile telephone so that the information is transmitted to the home owner's mobile telephone. The home owner is then able to access the information at the remote location indicative of the fact that the tradesperson is present at his home and cause information to be supplied from the remote location and received by the access means so that the access means unlocks the door to open the door for the tradesman. Thus, the home owner need not be present at his home to enable the tradesperson to gain access.

In the preferred embodiment of the invention a display is also coupled to that access means for displaying any desired message which can be transmitted from the remote location or previously supplied to the access means so that the message is displayed on the display when a predetermined code is supplied to the input. This embodiment of the invention enables additional instructions or information to be supplied by the home owner back to the tradesperson should that be necessary. Alternatively, messages can be left for other house members so that they can access the message when they arrive home and supply their predetermined code to the input.

In the preferred embodiment of the invention the access means can also supply the signal to the door locking means to unlock the door when a predetermined code is supplied to the input without the need for the information to be forwarded to a transmitter for transmission to a remote location. This enables other house members to gain access to the premises by simply supplying their predetermined code to the input to cause the door to open.

Preferably the transmitter is a telephone and the access means is hard wired to the telephone so that upon supply of a predetermined code or codes to the input the access means supplies the information to the telephone to cause the telephone to dial a predetermined number to enable the information to be transmitted via the telephone to the remote location.

Preferably the access means includes a processor directly coupled to the telephone or coupled to the telephone via a phone connection and a personal computer.

In one embodiment of the invention the input can be a plurality of input keys or a biometric sensor or a card reader for reading a card.

In some embodiments of the invention the access means can be connected to the transmitter by a hardwire or coupled to the transmitter by an infra-red link.

Preferably the door locking means includes a solenoid so that when the signal is supplied to the door locking means the solenoid is actuated to unlock the door.

The processor may also be coupled to a camera for filming or photography of the person attempting to gain access so that the person can be later identified.

In the preferred embodiment of the invention the camera supplies a signal to the processor indicative of an image captured by the camera and the processor supplies a signal indicative of the image to the transmitter for transmission to the remote location so that the image can be viewed on a display at the remote location.

In one embodiment of the invention the display at the

remote location may comprise a display on a mobile telephone. In other embodiments the display may include a computer screen.

In the preferred embodiment of the invention the transmitter transmits the information including the image over the public telephone system being either the hard wired telephone system or mobile or cellular system so that the home owner can view an image of the person to verify the identity of the person who wishes to gain access.

In particular embodiments of the invention the image may comprise the sole information which is transmitted to the remote location or, may include part of the information together with a predetermined code to identify a person seeking entry.

A further aspect of the invention is concerned with access to a secured environment such as a hotel room. As is well known, hotel rooms are usually accessed by way of a key which is supplied to the guest by the hotel when the guest registers at the hotel. The key can be in the form of a conventional key which turns a tumbler in the door or an electronic key in the form a card which is inserted into a card reader for gaining access to the door. This aspect of the invention is concerned with access systems for hotels or other environments where details of a guest or other user are taken to enable access to a particular room or area.

This aspect of the invention may be said to reside in an access system for a door including;

an input for enabling a user to input information;

a door locking means;

access control means coupled to the input and door locking means for actuating the door locking means

upon supply of information to the input;

data transmitting means for transmitting data to the access control means; and

wherein when a user supplies information to the input the access control means compares the information with the data transmitted to the access control means and if the information matches the data the access control means actuates the door locking means to open the door.

Thus, upon registration at a hotel or at any other secured environment information relating to the guest or person is transmitted by the transmitting means to the access control means associated with a door through which the person is to have access (such as the hotel room door). The data may be a code supplied by the hotel to the person or may be biometric information taken by the hotel from the person such as a biometric thumb print or the like. That information is transmitted to the access control means so that when the person arrives at the hotel door or other door through which the person is to be provided access, the person inputs information into the input (such as the predetermined code given to the person or the biometric information by placing a persons thumb on a biometric sensor). The access control means can compare the information with that transmitted to the access control means and if there is a match, the access control means opens the door to enable access to the room or environment.

The data transmitting means preferably comprises an internal telephone line connected to a telephone located in the room or environment, the telephone being coupled to the access control means for supplying the information by the telephone line to the access control means.

The telephone line can be the internal PABX system of the hotel.

The telephone is preferably coupled to the access control means by any infra-red link or by a dedicated hardwire connected between the room telephone and the access control means.

In both aspects of the invention the access control means can effectively be provided by a mobile telephone which is coupled to the door and which therefore provides a display and an input key pad, the phone being connected to the home telephone or hotel room telephone by an infra-red link or LAN connection. The mobile phone which forms the access control means does not have a dial up function but merely acts to pass and receive information. The mobile telephone may also perform the transmitting function and therefore include the data transmitter may form an integrated part of the access control means.

A further aspect of the invention is concerned with the ability to leave a message at a remote location for a person. The remote location may be a door to a person's house so that a message can be left for a house member, tradesperson or the like for access when that person arrives at the door.

This aspect of the invention may be said to reside in a remote display system, including;

a display for mounting a desired location;

connection means for connecting the display to a telephone; and

wherein a message can be left for display on the display by a person making a call to the telephone and transmitting a message to the telephone so that the message is supplied to the display by the connection means for display at the display.

Thus, messages can be left for people by dialling the telephone and transmitting a message via the telephone

system to the display.

The connection means may include a computer such as a personal computer which is coupled to the telephone and processes the message for display on the display. The connection means may also include a LAN connection.

This aspect of the invention may be used in conjunction with the door opening aspect of the invention previously described or without that aspect of the invention.

This aspect may also include an input for the input of information so that the message is displayed only upon the input of desired information such as a code or biometric information.

Preferred embodiments of the invention will be described, by way of example, with reference to the accompanying drawings in which;

Figure 1 is a diagram showing a layout of one preferred embodiment of the invention applicable to home use;

Figure 2 is a block diagram of part of the embodiment of Figure 1; and

Figure 3 is a diagram showing a second embodiment of the invention applicable to hotels.

With reference to Figure 1 the access system according to the preferred embodiment of the invention is used with a door 10 which may have a handle 12. The door 10 is provided with a door mounted locking system 14 which is shown in more detail in Figure 2. The system 14 is connected to CDS box phone connection 16 and to a home PC 18 by a LAN connection 20. The PC 18 is connected to a home telephone 20 by a line 22. Alternatively, the door lock system 14 can be directly connected to the telephone 20 by a line 24.

The door lock system 14 is best shown in Figure 2 and includes a microprocessor 30 to which is connected a key pad 34. The microprocessor 30 is also connected to a solenoid lock 32 for selectively locking and unlocking the door 10. The microprocessor 30 is also connected to a display 32. Rather than inputting information by way of a key pad 34 or, as well as inputting information by way of the key pad 34, the lock system 14 can receive information by way of a biometric sensor 36 or a smart card reader 38. The microprocessor 30 may also control a camera 40 for filming anyone attempting to gain access to the door 10 and maintaining a record of the person gaining access to the door 10. The microprocessor 30 is connected to the CDS box 16 by line 40. However, in alternative embodiments the microprocessor may be connected to the home PC 18 or telephone 20 by an infra-red link 42.

In order for the home owner or any house member to gain access to the door 10 that person simply inputs a predetermined code into the key pad 34 which may be a four digit code or the like the microprocessor 30 then compares that code with predetermined codes stored in the microprocessor 30, or, alternatively stored in the home PC to which the microprocessor 30 is coupled, and if there is a match the door can be opened. The lock 32 may be in the form of a solenoid lock so that when a signal is applied to the solenoid the solenoid is retracted so as to unlock the door.

If it is desired to allow access to the home by someone other than a housemember, such as a tradesman, or the like when the tradesman has booked a predetermined four-digit code can be given to the tradesman. When the tradesman arrives at the door 10 the tradesman inputs the four-digit code into the keypad 34. The microprocessor 30 on receipt of the code 34 will output and signal to the PC 18 so the

PC 18 will cause the telephone 20 to dial the work telephone number or mobile telephone number of the house owner so that information is transmitted to a remote location for receipt by the home owner. Upon receipt of that information the home owner can then input information via his mobile phone or office telephone back to the telephone 20 so that information can be supplied to the lock system 14 via the line 22, PC 18, connection 20, CDS box 16 and line 40 to the microprocessor 30. The microprocessor 30 upon receipt of the appropriate information from the home owner can then output a signal to the lock 32 to unlock the door to grant access to the tradesman. A message to the tradesman can also be transmitted in the same fashion for displaying on the display 32 in the event it is desired to change any arrangement with the tradesperson or issue further instructions. Furthermore the microprocessor 30 can also activate the camera 40 to film or photograph the person gaining access to the premises for later identification if necessary.

In other embodiments the input into the microprocessor 30 can be by way of a smart card reader 38 or a biometric sensor 36. However, for actuation by a workman it is desired that the keypad 34 be present so as to enable the workman to input a predetermined code which can be supplied to the workman.

The predetermined code given to the tradesperson can be cancelled from the system after the tradesperson has gained entry so that it cannot be reused.

Biometric information relating to the house members can be stored in the PC 18 for comparison with data received via the biometric sensor 36 should that form of input be used.

The camera 40 also enables any person wishing to gain

access to be displayed on a TV or monitor (not shown) so that any person who is at home can see who is at the front door before allowing access through the door 10 in the conventional manual way.

In other embodiments rather than provide input data to the system by the keypad 34, a receiver 160 can be coupled to the microprocessor 30 for receiving input commands by way of wireless transmission. The transmitter from which information is transmitted to the receiver 160 may be a mobile phone including a transmitting capability for transmitting data over a small distance, for example "blue tooth" technology. Thus, in this embodiment when the workman approaches the door the transmitter in his mobile telephone can be transmitting a predetermined signal over a short distance, which signal has previously been encoded into the workman's mobile telephone, so that when the workman approaches the door the signal is received by the receiver 160 and analysed by the microprocessor so that the processor can control the telephone by line 40 to cause the home owner to be telephoned to provide the information to the home owner's telephone or PC to a remote location. The home owner may then input an appropriate command into the telephone for transmission back to the processor over the telephone network to cause the processor 30 to output a signal to unlock the door 10 as previously described.

According to this embodiment of the invention the camera 40 may also capture an image or images of the person presenting himself at the door and information indicative of that image can be transmitted over the telephone connection 40 to the remote location for receipt by the householder so that the householder can view an image of the person either on a computer screen or on any other display, such as the display associated with the user's mobile telephone. According to this embodiment the coded information indicative of the person may comprise the image

so that that is all the information that the householder receives to verify the authenticity of the person. However, in other embodiments both the image and additional data such as a four-digit code can be transmitted. This embodiment enables the real time transmission of an image of the person wishing to gain access to the householder so that the householder can visually verify the authenticity of the person by the image as well as any code which is transmitted with the image.

According to this aspect of the invention the receiver 160 may also include a transmitting capability so that the predetermined code can be output from the transmitter to be received by a transmitter in the workman's telephone when the workman approaches the door. In this embodiment, the workman would provide his mobile telephone number or transmitter number associated with his telephone to the householder when an appointment is made and the householder can program that code into the microprocessor so that the transmitter outputs the coded signal. When the workman approaches the door the workman's mobile telephone receives the signal, which is coded so that it can only be received by the telephone or transmitter number which the workman provided, so that the necessary information is transmitted to the workman's telephone in this way. Once that information is received by the telephone the receiver in the telephone can transmit over the short distance, the required information to the receiver 160 to initiate the sequence referred to above so that information is transmitted to the householder to enable the householder to decide whether entry should be granted to the person.

Figure 2 is a diagram of an embodiment applicable to hotel guest rooms. In this embodiment the guest room 50 has a door 52 as is conventional. The door 52 has a lock system 54 which is the same as the lock system described with reference to Figure 2. The lock system 54 is connected to

telephone 60 in the guest room by line 40 (not shown in Figure 3) or an infra-red link (also not shown in Figure 3). The guest room telephone 60 is connected via the PABX system 62 of the hotel with the reception desk 64 at the hotel. Hotel operating software 70 can operate both the PABX system and the reception protocols for registering of guest in accordance with this embodiment.

When a guest presents at reception for registering at the hotel the reception can provide the guest with a unique four digit code to enable access to the guest's room or any other room which the guest is entitled to use. Alternatively, the user can provide biometric information by placing his thumb on a biometric sensor (not shown) at reception for receipt of biometric information which will provide the user identification when the user presents at the door 52.

The information identifying the guest and which is provided at reception whether it be in the form of a four digit code or biometric information is transmitted via the PABX system 62 to the guest room telephone 60. Thus, the four-digit code or biometric information can be supplied to the microprocessor 30 of the system 54 from the telephone 60 by the infra-red link or hard wire connection previously mentioned.

When the guest arrives at the door 52 the guest inputs his or her four digit code into the key pad 34 or places his or her thumb print on the biometric sensor 36 so that the required information is input into the microprocessor 30. The microprocessor 30 then compares that information with the information supplied from reception via the PABX system 62 and the telephone 60 and if there is a match a signal is applied to the door lock 32 to cause the door 52 to open.

In this embodiment of the invention the code or biometric

information is also downloaded to any other door that the guest is authorised to use during their stay such as pool area, elevator, clubroom etc.

Once again, in this embodiment of the invention the camera 40 can be mounted for recording entry to particular areas by a guest or other person.

Furthermore, the display 32 can be used to display messages for the guest and also usual hotel room information to outside staff such as "do not disturb" message and "clean room" message. Furthermore, the display 32 could also be used to display advertisements, hotel amenities, restaurants and other hotel resorts which may be of interest to the guest 32 as the guest gains access to his or her room.

Once again, the camera 40 can also be used to enable the guest when in the room to view who is at the front door before allowing the other person access to the room.

Since modifications within the spirit and scope of the invention may readily be effected by persons skilled within the art, it is to be understood that this invention is not limited to the particular embodiment described by way of example hereinabove.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An access system for a door, including;

an input for enabling a user to input information;

door locking means for locking the door and selectively enabling the door to be opened;

access means coupled to the input and the door locking means for forwarding the information supplied to the input to a transmitter so the transmitter can transmit the information to a remote location, and for receiving information from the remote location to apply a signal to the door locking means for unlocking the door.

2. The access system of claim 1 wherein a display is also coupled to that access means for displaying any desired message which can be transmitted from the remote location or previously supplied to the access means so that the message is displayed on the display when a predetermined code is supplied to the input. This embodiment of the invention enables additional instructions or information to be supplied by the home owner back to the tradesperson should that be necessary. Alternatively, messages can be left for other house members so that they can access the message when they arrive home and supply their predetermined code to the input.

3. The access system of claim 1 or 2 wherein the access means can also supply the signal to the door locking means to unlock the door when a predetermined code is supplied to the input without the need for the information to be forwarded to a transmitter for transmission to a remote location. This enables other house members to gain access to the premises by simply supplying their predetermined code to the input to cause the door to open.

4. The access system of any one of claims 1 to 3

wherein the transmitter is a telephone and the access means is hard wired to the telephone so that upon supply of a predetermined code or codes to the input the access means supplies the information to the telephone to cause the telephone to dial a predetermined number to enable the information to be transmitted via the telephone to the remote location.

5. The access system of claim 4 wherein the access means includes a processor directly coupled to the telephone or coupled to the telephone via a phone connection and a personal computer.

6. The access system of any one of claims 1 to 5 wherein the access means is connected to the transmitter by a hardwire or coupled to the transmitter by an infra-red link.

7. The access system of any one of claims 1 to 6 wherein the door locking means includes a solenoid so that when the signal is supplied to the door locking means the solenoid is actuated to unlock the door.

8. The access system of any one of claims 1 to 7 wherein the processor is also coupled to a camera for filming or photography of the person attempting to gain access so that the person can be later identified.

9. The access system of any one of claims 1 to 7 either includes a camera for supplying a signal to the processor indicative of an image captured by the camera and the processor supplies a signal indicative of the image to the transmitter for transmission to the remote location so that the image can be viewed on a display at the remote location.

10. The access system of claim 9 wherein the remote

location may comprise a display on a mobile telephone.

11. An access system for a door including;

an input for enabling a user to input information;

a door locking means;

access control means coupled to the input and door locking means for actuating the door locking means upon supply of information to the input;

data transmitting means for transmitting data to the access control means; and

wherein when a user supplies information to the input the access control means compares the information with the data transmitted to the access control means and if the information matches the data the access control means actuates the door locking means to open the door.

12. The access system of claim 11 wherein data transmitting means preferably comprises an internal telephone line connected to a telephone located in the room or environment, the telephone being coupled to the access control means for supplying the information by the telephone line to the access control means.

13. The access system of claim 11 wherein the telephone line is the internal PABX system of the hotel.

14. The access system of claim 11 wherein the telephone is coupled to the access control means by any infra-red link or by a dedicated hardwire connected between the room telephone and the access control means.

15. A remote display system, including;

a display for mounting a desired location;

connection means for connecting the display to a telephone; and

wherein a message can be left for display on the

display by a person making a call to the telephone and transmitting a message to the telephone so that the message is supplied to the display by the connection means for display at the display.

Dated this 10th day of November 2000.

COMPUTER DETECTION SYSTEMS PTY LTD
By their Patent Attorneys
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Trade Mark Attorneys of Australia

OPTION 1 – HOME

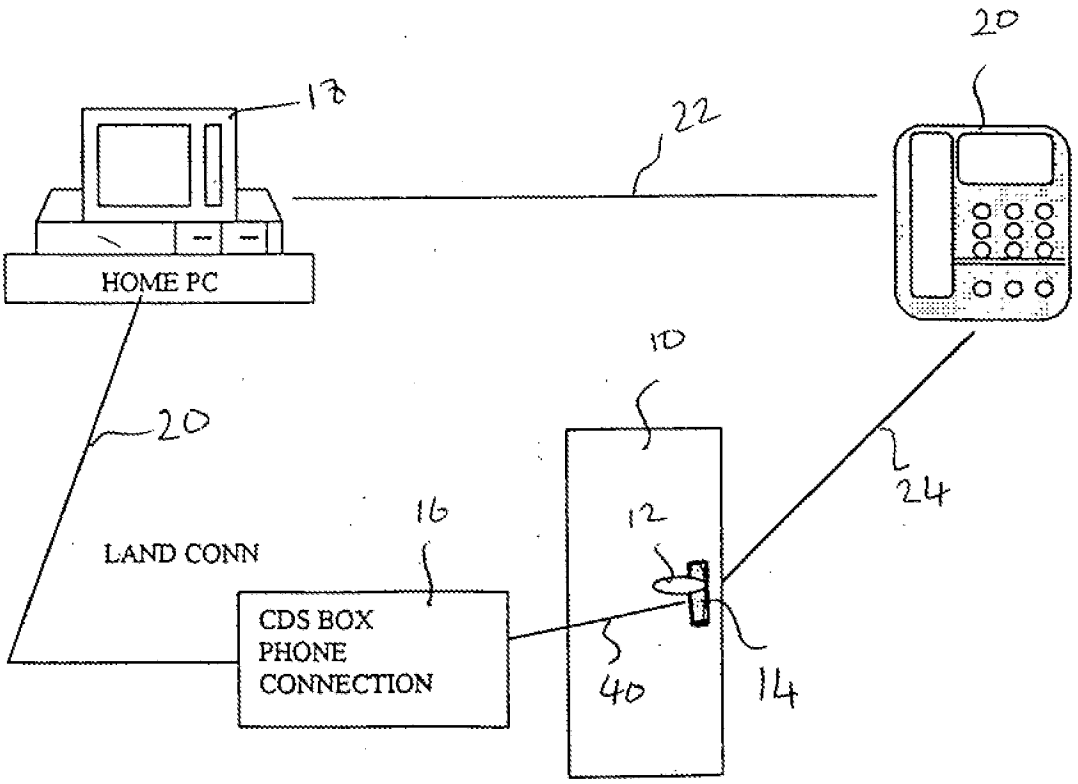

Fig1

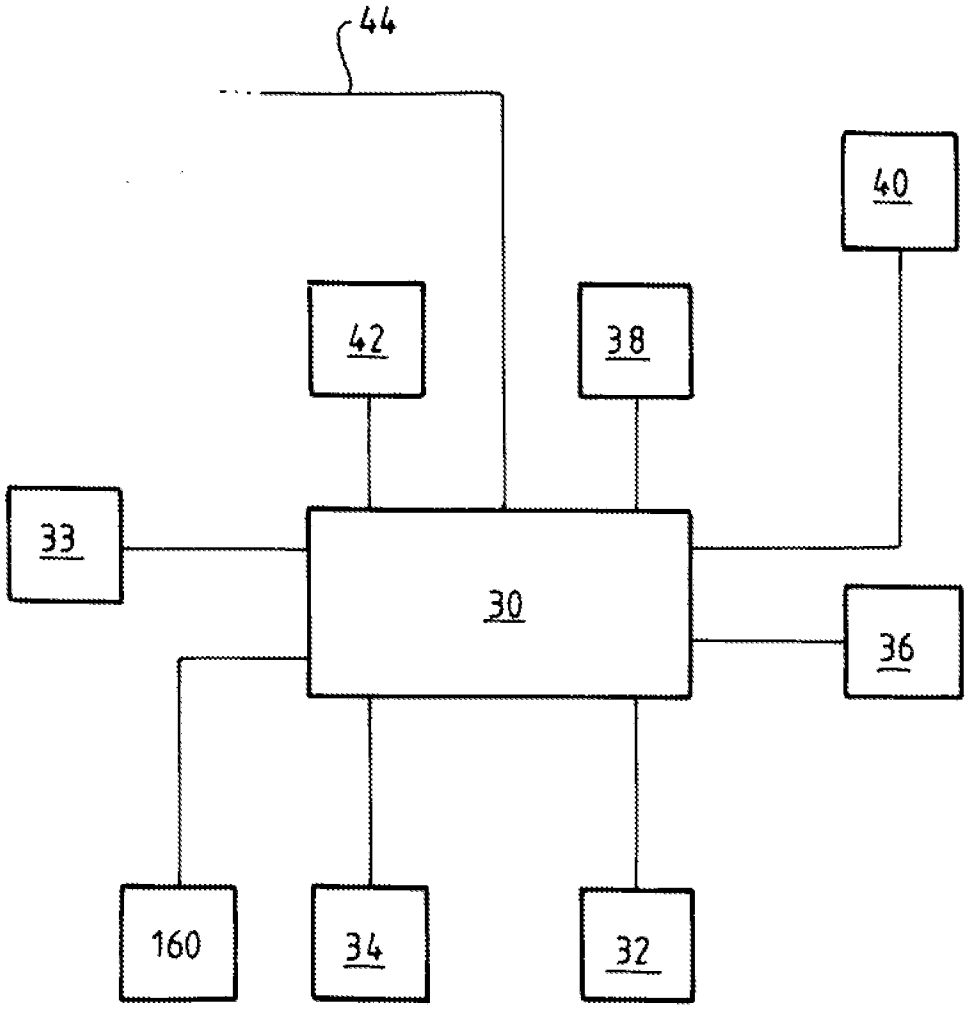

FIG. 2.

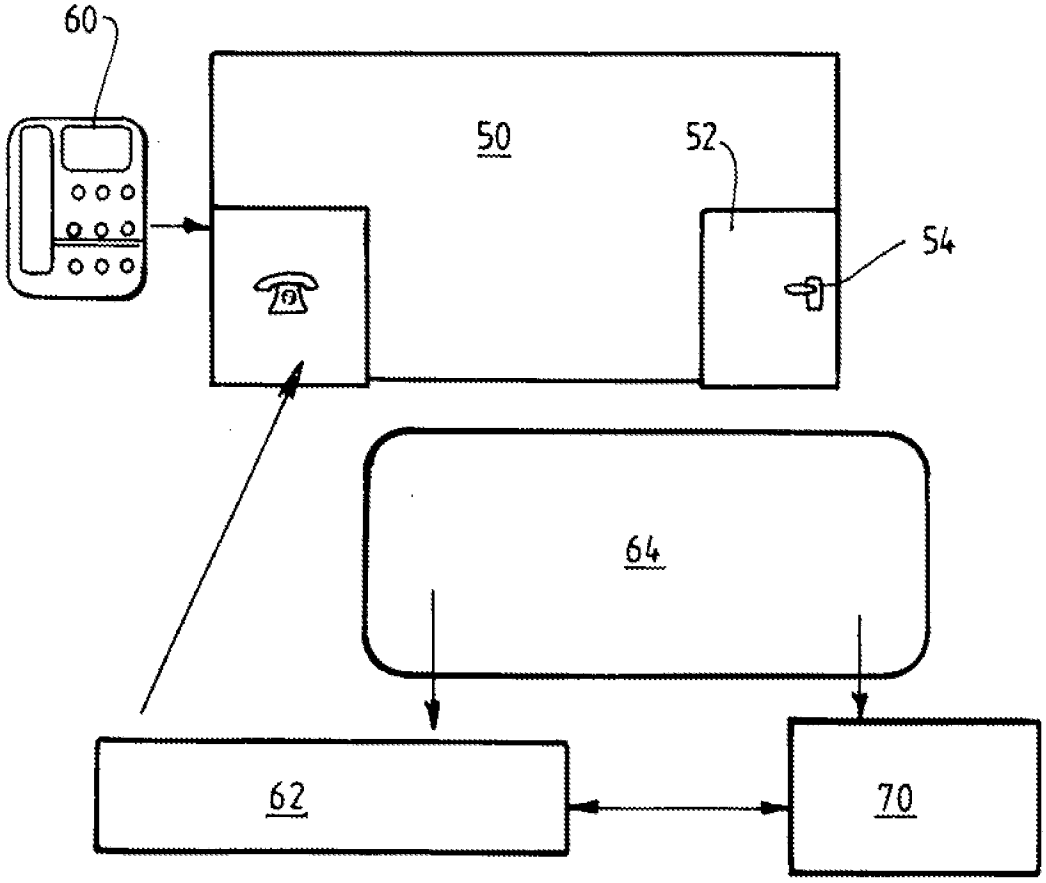

FIG. 3.